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ABSTRACT

Various simulations designed for adult learning experiences are described. A simulation is defined as "an operating model that displays processes over time and thus may develop dynamically." It is stated that this definition implies that the teacher can design a simulation that he can manage and then can increase its complexity. One simulation used focused on providing students with realistic experiences in dealing with varying kinds of office communications. A second simulation was of a detailed office procedure for processing a letter from its initial development to mailing. The third simulation involved the formation of two small companies which were in competition with each other. The teachers reported that the "office" simulations seemed easy to design and implement. The students were all actively involved in their learning and in making some decisions about the content of their learning. Individualization was accomplished in the simulations via student self-evaluation and self-selection from a variety of realistic office tasks. (Author/CK)

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SIMULATION IN ADULT EDUCATION

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Background

A major theme in the current educational reform movement is "individualized instruction." Heathers states that individualization of instruction "consists of designing and conducting with each student programs of studies that are tailor-made to fit his learning needs and his characteristics as a learner." (1968) Traditional methods of instruction such as lectures, question and answer sessions, and large-group discussions have been attacked as not meeting the needs of individual learners. Advances in technology have allowed major efforts such as Individually Prescribed Instruction (Lindvall and Bolvin, 1967) and Program for Learning in Accordance with Needs (Sponberg, 1968) to be designed, developed, and disseminated to school systems across the country.

However, little has been done to help the great majority of individual teachers develop individualization techniques for use in their classrooms. The literature is full of global principles that individualization programs should incorporate, but few practical models to help individual teachers implement these principles can be found. Commercial materials are now available as "instructional systems" but these are often adopted rather than adapted. Teachers need to adapt existing instructional resources in creative ways to meet the needs of the particular students in their own classes.

Simulation is an instructional technique that can be used by teachers to adapt their available resources to the instructional needs of individual

students. The term "simulate" can have a variety of meanings. Webster's New World Dictionary (1968) offers the definition "to look or act like." This global definition offers little focus for the educator attempting to design and implement simulations. Raser (1969, p. 10) states that "a simulation is an operating model that displays processes over time and thus may develop dynamically." This definition implies that the teacher can design a simulation that he can manage and then can increase its' complexity as his competence increases and as he formatively evaluates the implementation of the simulation in his own setting. This philosophical stance forms the basis for the simulations designed for adult learning experiences described in this paper.

History of Simulation

The use of simulation in education is a rather recent phenomena. In fact, simulations themselves aren't very old. Their apparent origin was in the "Kriegspiel", a true war game developed in 1798 at Schleswig for training purposes and probably based on the medieval game of chess. By the latter nineteenth century the Prussians had developed a "free" Kriegspiel involving a high level of sophistication providing great latitude for daring and imaginative decision-making. West Point introduced war games into its curriculum at the turn of the century. Both the Germans and Japanese employed the training technique extensively during World War II (records of other countries are not available).

In 1955, RAND Corporation's Social Science Division developed a role-playing, game technique for the study of political issues which allowed for testing strategies and contingency planning. The American Management Association in 1957 introduced its "General Management Business Simulation" which marked the real start of educational business simulation

games, and the following year, the Massachusetts Institute of Technology introduced its PME (Political-Military Exercise) based on the RAND Corp. work. This ushered in the era of respectability for simulation games as a learning tool. In 1964, the Board of Cooperative Educational Services (BOCES) in Westchester County copyrighted its Sumerian Game, the first computer-based educational simulation for young children (sixth grade).

James Coleman concluded The Adolescent Society, a 1961 study of ten midwestern high schools, with recommendations for the development of academic games, organized like interscholastic athletics. According to Coleman, bringing this kind of activity into the classroom could serve not only as an effective means of communicating certain intellectual materials but also as a means of channeling the efforts of able students into intellectual areas, which suffered in competition with sports, cheerleading, and other activities highly valued by adolescents. Nova High in Florida is an example of a school that has applied this idea.

Simulation for Adult Learning

The authors were hired as consultants to the Community College of Allegheny County (Boyce Campus, Monroeville, Pennsylvania) Clerical Skills Training Project in an attempt to help make the program relevant to the students' needs. Various individualization principles were implemented at different times, but the simulation techniques were the most useful for the teachers in the project. Limited physical space and limited time for in-service training precluded any major systems approach to the individualization of instruction.

Classroom observations revealed that the teachers were not meeting the needs of students except in gross ways. The students (all female, ages

18 to 50, and from poverty areas) were enrolled in typing, office practice, and business English courses. However, they were not developing skills that would help them adapt to office jobs once they were employed. Students were not involved in meking decisions about their own levels of competence and what instructional experiences they needed next.

Most learning psychologists feel that learning (1) is based on experience, (2) is enhanced by motivation, (3) requires active participation by the learner, and (4) is maintained by application of developed knowledge and skills. The authors designed several simulation activities with these principles in mind. Emphasis was also placed on student self-evaluation and student participation in curriculum design.

Since simulation was a new experience for both teacher and students, the authors made the first simulation a simple "in-basket and out-basket" exercise. The focus was on providing students with realistic experiences in dealing with varying kinds of office communications. The students selected the name for a company ("X" Typewriter Company). The authors defined four administrative positions for the company and students attached surnames to these positions. Students comprised the secretarial pool for the company. The authors generated material in the names of the company administrators for the out-basket and the secretarial pool processed the material. The regular teacher observed the process (at her request) and later joined the activity by evaluating the products returned to the in-basket.

The material for the out-basket consisted of (1) inter-office memos, (2) letters from officers to customers about sales and service, (3) personal memos, and (4) miscellaneous correspondence. Tasks demanded a wide variety of competencies from the secretarial pool, from getting a phone number to

generating and typing a response to a letter from an irate customer. The acceptable performance level on the tasks was the correct telephone number, an "acceptable" typewritten letter with no errors, etc. The teacher determined the "acceptability" of letters according to guidelines she had established for the course. Figure 1 illustrates the task flow for the simulation.

A second and more complex simulation was designed in cooperation with one of the teachers. The simulation was of a detailed office procedure for processing a letter from its initial development to mailing. The entire simulation was based on dictation demands that occur in actual offices. For example, students had the experience of taking dictation from a male voice at varying speeds. The procedures for implementing this simulation follow.

1. The class of 25 students was divided into 4 groups of 6, 6, 6 and 7 students. Two cassettes were available for dictation. A male teacher dictated 4 letters (2 on each tape). One letter was a short one-page letter; the other was a long one-page letter. Two letters were available in shorthand for students to transcribe (eliminating the "take dictation" step). These two letters were selected from the textbook.

2. (a) 6 girls listened to the first letter on one cassette, together; all started on rest of "flow" together.

   (b) 6 girls listened to first letter on other cassette, together; all started on rest of flow together.

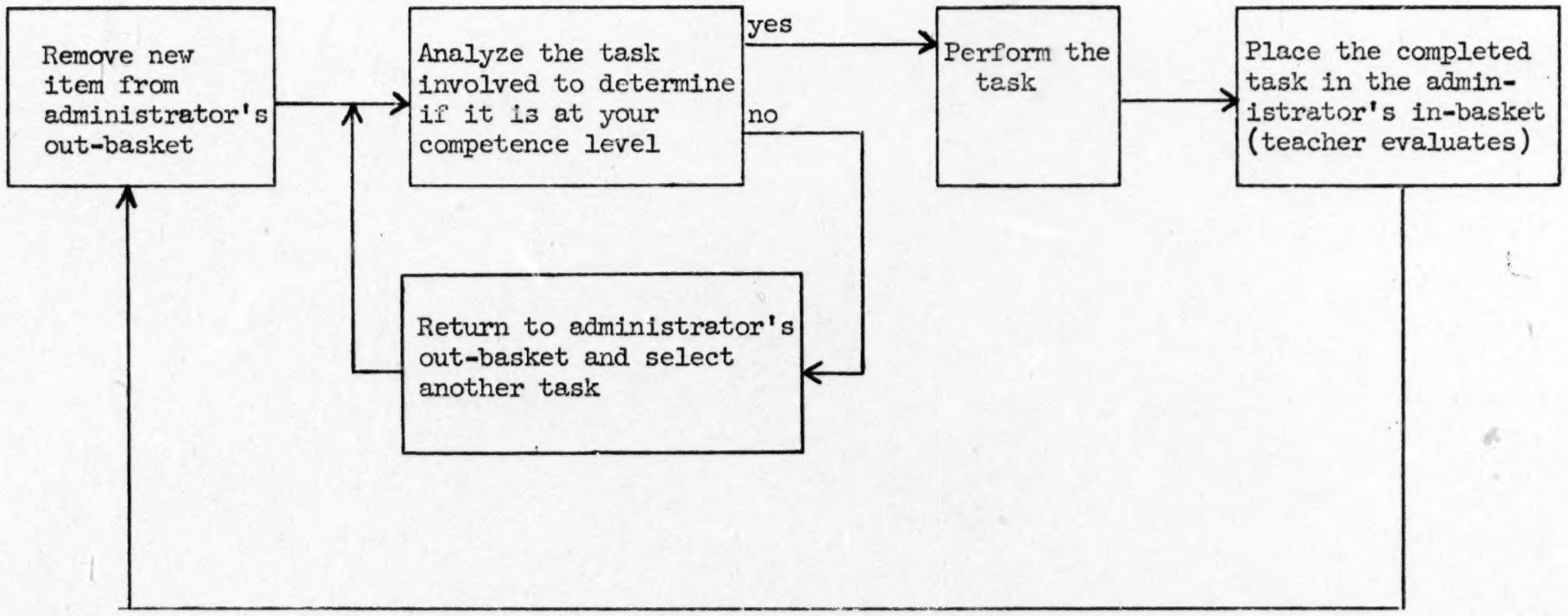
   (c) 6 girls transcribed letters from letters already in shorthand; they then worked through rest of flow individually.

   (d) 7 girls worked the same as in step (c).

3. As girls from each group reached different stages where "repeat" was feasible, they "repeat" or "went ahead" as the resources were available. The groups of 6 did not necessarily remain intact after the first dictation session. Small groups of 2 or 3 listened to the remaining letters on the cassettes when they were ready to use the same resources at the same time. Each girl took dictation on 2 letters, used the book for given transcription for 1 letter, and then completed the flow for

FIGURE 1

IN-BASKET AND OUT-BASKET ACTIVITY FLOW


Remove new item from administrator's out-basket
Analyze the task involved to determine if it is at your competence level
yes
no
Perform the task
Place the completed task in the administrator's in-basket (teacher evaluates)
Return to administrator's out-basket and select another task

all 3 letters.

4. The flow chart was on the board for reference as needed. The teacher examined the final letter for acceptability using the criteria established for the course.

Figure 2 illustrates the "letter preparation flow" for this simulation.

A third and still more complex simulation of office procedures was designed in cooperation with another teacher. This simulation involved the formation of two small companies. The companies were in competition with each other in reference to the quality and quantity of office work produced and the resources used. This simulation involved students to a greater extent in leadership positions than had the previous two simulations. It was designed to (1) reinforce and maintain developed secretarial skills necessary for employment, (2) add dimensions of reality to the class (i.e., time is money, supplies are money, quality of work is important), (3) help students identify their skill weaknesses, and (4) add competition as an incentive to aid students in improving their skills. The procedures for implementing this simulation follow.

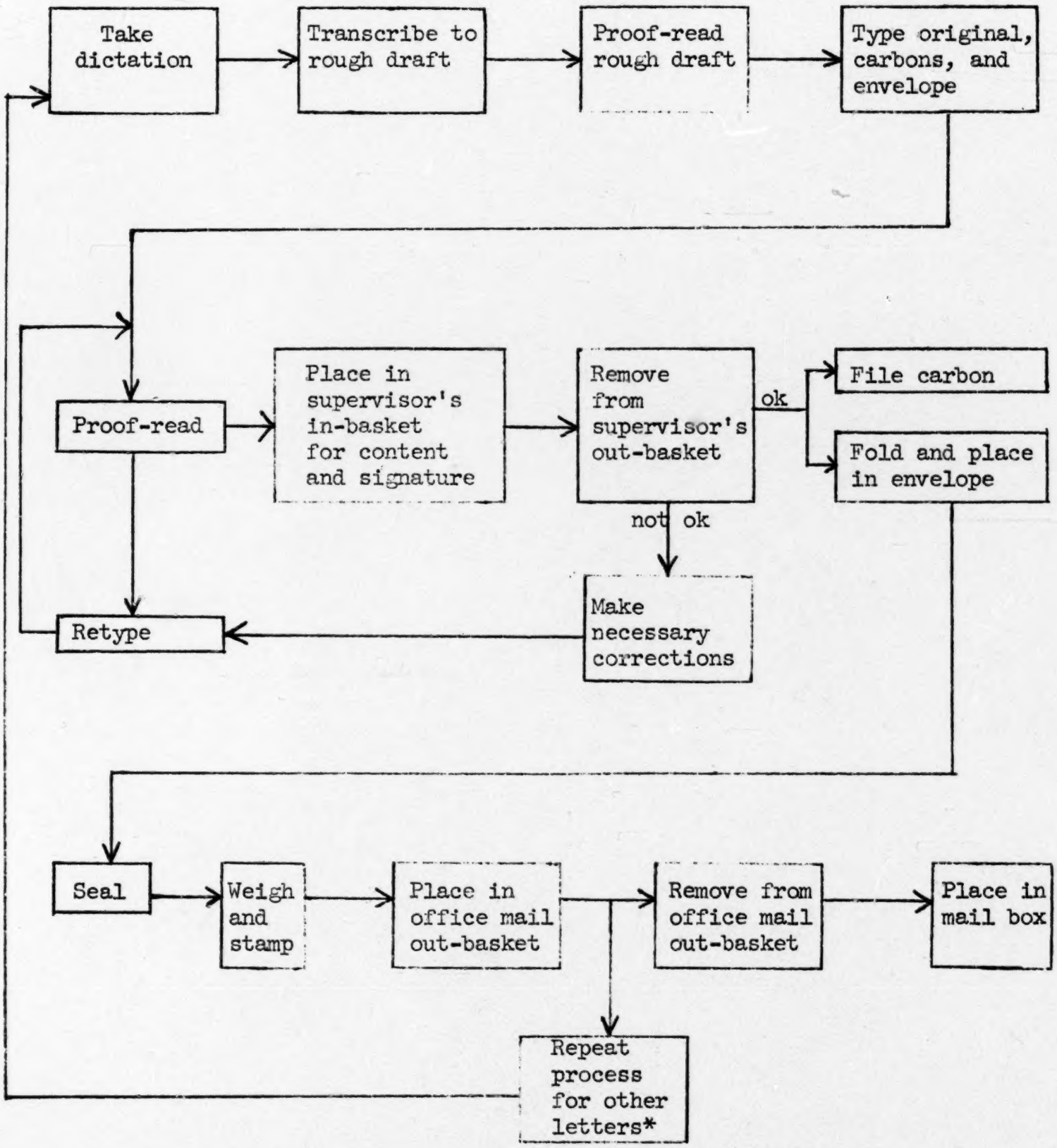
1. Students formed two groups, each of which constituted a company. Each group (1) selected a company name, (2) elected an office manager and assistant manager, and (3) elected a mail clerk. The office manager was responsible for assigning work (in this case letters from the typing book) to employees (students). The mail clerk was responsible for distribution of supplies (typing paper, carbon paper, onion skin paper, envelopes, erasers) assigning postage to completed letters and checking accuracy of ZIP code numbers.

2. One hour and fifteen minutes (the class period) was the time set for the simulated company to operate. The office manager (aided by the assistant manager) assigned tasks and checked completed work deciding whether it should be redone or was ready to be submitted for final evaluation.

3. At the end of the time period, completed work was evaluated by the teacher and assigned points. The scoring system was decided upon by the students and the authors during the organizational process. The score was based on the value of letters completed

FIGURE 2

LETTER PREPARATION FLOW



*The process can be repeated here or after the "seal" step. Several letters can be placed in the supervisor's in-basket at the same time after step 5.

(to be completed, letters must have passed through the mail clerk, have been checked, and have postage added). The formula for determining the score was: Score = (sum of letter ratings) - (number of wasted pages) - (number of wasted envelopes). Appendix A contains a sample tabulation for two companies. The company with the highest score won the round.

4. In succeeding rounds roles could be changed and types of tasks modified (i.e., stencil preparation and processing, hectographic reproduction, etc.). Records were kept concerning the productivity of each student and changes that took place in their productivity during succeeding rounds.

Figure 3 illustrates the task flow for this simulation.

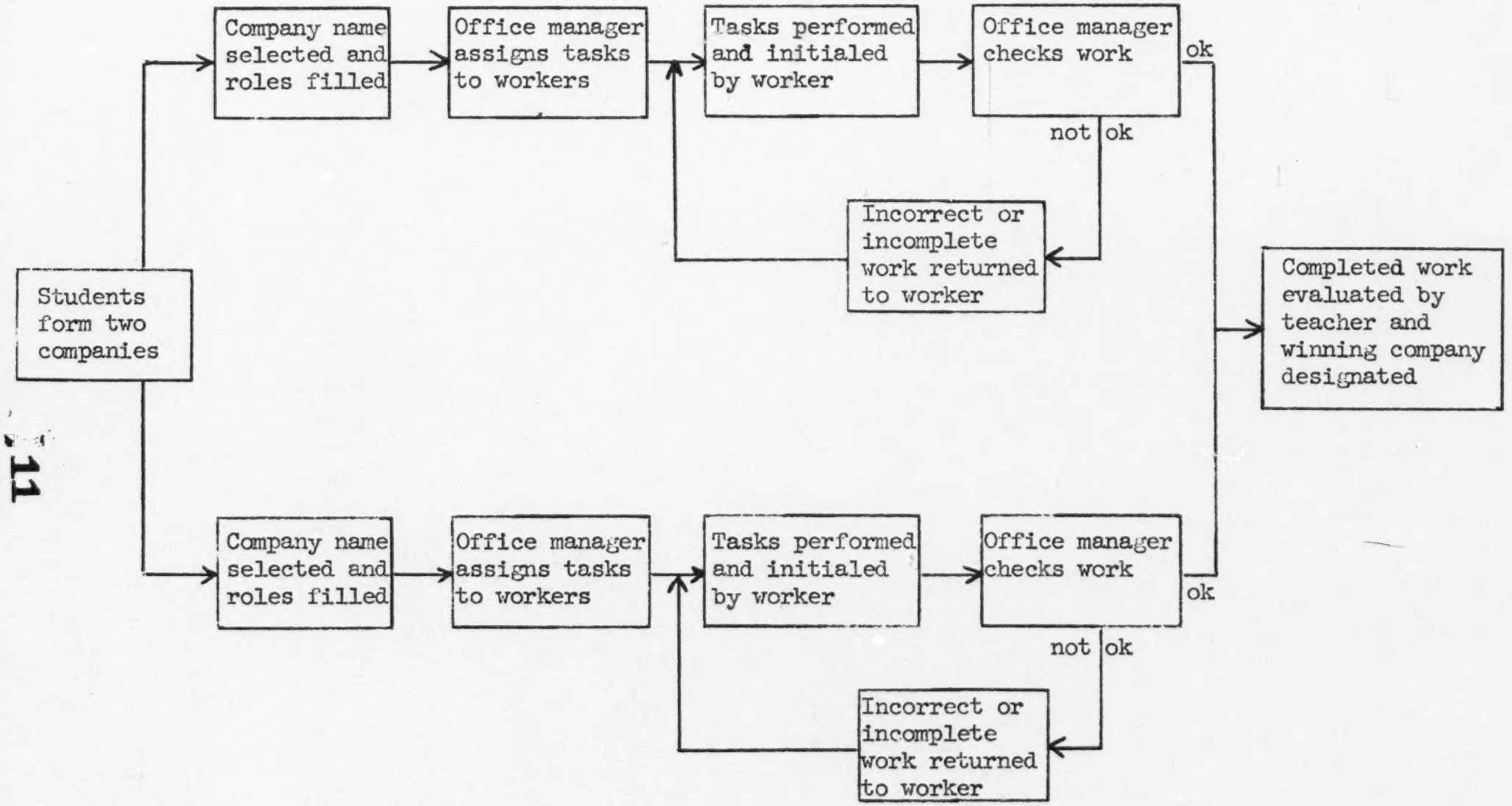
Summary

The teachers reported that the "office" simulations seemed rather easy to design and implement. One teacher reported that the process of task analysis that he went through as he participated in the design of the second simulation was extremely beneficial and that he could see how it could be used to develop other simulations for office procedures. This teacher also developed an awareness of and basic competence in curriculum development. He began (1) to plan objectives in terms of student behaviors; (2) to design procedures to have students meet these objectives according to their needs within the limit of available resources; and (3) to evaluate the procedures to determine their strengths and weaknesses.

The students were all actively involved in their learning and in making some decisions about the content of their learning. They reported that the simulations were beneficial to them because the experiences gave them the opportunity to assess their strengths and weaknesses in reference to specific tasks they would be expected to accomplish as office workers. They felt that the simulations gave them insight into the interrelationships of office procedures. The concept that "material and time is money"

FIGURE 3

TASK FLOW FOR SIMULATION OF COMPETITIVE COMPANIES


Students form two companies
Company name selected and roles filled
Office manager assigns tasks to workers
Tasks performed and initialed by worker
Office manager checks work
ok
not ok
Incorrect or incomplete work returned to worker
Completed work evaluated by teacher and winning company designated
Company name selected and roles filled
Office manager assigns tasks to workers
Tasks performed and initialed by worker
Office manager checks work
ok
not ok
Incorrect or incomplete work returned to worker

also became meaningful to many students as a result of the third simulation. The simulations demanded that the students apply their developing skills and knowledge to new and relevant tasks thereby increasing their motivation and office skills. Individualization was accomplished in the simulations via student self-evaluation and self-selection from a variety of realistic office tasks.

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APPENDIX A

Score = (sum of letter ratings) - (number of wasted pages) - (number of wasted envelopes)

Company A	Company B
Produced 8 letters	Produced 9 letters
Used 9 envelopes	Used 9 envelopes
Used 10 sheets of paper	Used 15 sheets of paper
Wasted 1 envelope	Wasted 1 envelope
Wasted 2 sheets of paper	Wasted 6 sheets of paper

Letter ratings on a basis of "5 as best" and "1 as worst".

Letter ratings: 5,4,4,3,3, 3,2,1	Letter ratings: 5,5,4,4,3,3, 2,2,1
Sum: 25	Sum: 29
Score: (25) - (2) - (1) = 22	Score: (29) - (6) - (1) = 22

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